

The

ONTARIO WATER RESOURCES

COMMISSION

INDUSTRIAL WASTE SURVEY

of

DOMINION FOUNDRIES AND STEEL, LIMITED

Hamilton.

1970

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A  
Report On  
An Industrial Wastes Survey

of

DOMINION FOUNDRIES AND STEEL, LIMITED  
Hamilton, Ontario.

October 27, 29, 30  
and  
November 3, 1970.

Division of Industrial Wastes  
ONTARIO WATER RESOURCES COMMISSION

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## REPORT

# Ontario Water Resources Commission

Municipality..... Hamilton, Ontario..... Date of Inspection Oct. 27, 29, 30 and  
Nov. 3, 1970.  
Re:..... DOMINION FOUNDRIES AND STEEL, LIMITED.....  
Field Inspection by G. V. Buxton, J. D. Luyt..... Report by J. D. Luyt.....

An industrial wastes survey was conducted at Dominion Foundries and Steel, Limited, Hamilton on October 27, 29, 30 and November 3, 1970.

The survey was designed to:

- a) determine the waste loadings discharged to Burlington Bay by the Company,
- b) indicate to the Commission and the Company those areas or operations within the plant still requiring improved waste control and disposal systems and procedures.

### SUMMARY

Dominion Foundries and Steel, Limited, located on the Hamilton Bayfront north and south of Burlington Street is a fully integrated steel-works having a production capacity of some 2,200,000 ingot tons of steel per year. Positive steps have been taken by the Company to improve the quality of the waste effluents discharged. However, major problems still remain and are outlined in more detail in the body of this report. The most significant outstanding problems are considered to be the high concentrations of oils and iron in a number of the discharges to Burlington Bay.

It is recommended that Dominion Foundries and Steel, Limited develop and implement the necessary waste control and treatment measures, and consequently, provide adequate protection to the receiving body of water, Burlington Bay.

The sampling programme was carried out on October 27, 29, 30 and November 3, 1970. The sampling points are listed below and located on the accompanying diagram.

Sample Point No.	Description	Disposal	Flow (IGPD)
<u>Main Plant</u>			
1.	Scale Pit, 7-stand plate mill	Ottawa St. sewer	9,000,000
2.	2 Hi-Hot mill, scarfer, coiler	" )	
3.	2 Hi-Hot mill, scarfer, coiler	" )	6,250,000
4.	2 Hi-Hot mill, scarfer, coiler and hot mill basement.	" )	
5.	South soaking pit	"	1,500,000 (est.)
6.	No.1 Pickle line	"	280,000
7.	Electrotinning, foundry and 56" tandem temper mill.	"	2,760,000
8.	Electrotinning lines	"	1,650,000
9.	Foundry service building and electrical repair shop.	Depew St. sanitary sewer.	1,000,000
10.	Foundry core aisles, central boiler house.	"	small
11.	Annealling	Beach Road sanitary sewer.	small
12.	No.3 Guard House	"	small
13.	South Cold Rolling, Oil reclaim.	Ottawa St. sewer	200,000
14.	Ottawa St. sewer outfall	Burlington Bay	-
			<hr/> 22,640,000
<u>Homer Street Plant</u>			
15.	No. 3 Pickle line	Ottawa St. sewer	670,000
16.	Temper mill, annealling	"	600,000
17.	No. 2 Cleaning line	"	2,400,000
18.	Cold Rolling, 5-stand mill, galvanizing line	"	1,230,000
19.	No. 2 Pickle line	"	700,000
			<hr/> 5,600,000

Sample Point No.	Description	Disposal	Flow (IGPD)
<u>Bayfront Area</u>			
20.	Coke Ovens and By-Product Area	Burlington Bay	5,300,000
21.	Melt Shop	"	9,000,000
22.	Coke Ovens, By-Product area and Melt Shop.	"	14,300,000
23.	Boiler House	"	10,700,000
24.	Old Melt Shop Outlet	Kenilworth slip	small or nil
25.	Slurry to Dorr Thickener	-	-
26.	Effluent from Dorr Thickener	lagoon	19,400,000
27.	Slurry to Link-belt Thickener	-	-
28.	Effluent from Link-belt Thickener	lagoon	15,100,000
29.	South Inlet to Lagoon	-	47,500,000
30.	North Inlet to Lagoon	-	10,100,000
31.	Lagoon Effluent	Burlington Bay	57,600,000
32.	Phenol Plant Influent (before water dilution)	-	-
33.	Phenol Plant Influent (after water dilution)	-	-
34.	Phenol Plant effluent	lagoon	216,000
35.	Spent Pickle Liquor	Burlington Bay	50,000
36.	Silicon steel plant	-	-
37.	Service water at Bayfront pumphouse.	-	-
			82,600,000
Grand Total:			110,840,000

The flow figures were obtained from the Company, and were reported to be, in most cases, the results of its 1970 flow measurement survey.

The analytical results are tabulated in Table I.

TABLE I

"ALL RESULTS EXCEPT PH IN PPM UNLESS NOTED OTHERWISE"

SAMPLE POINT AND DESCRIPTION	BOD 5	COD	SUSP. SOLIDS	DISS. SOLIDS	PH	TOTAL IRON	DISS IRON	ETHER SOLUBLES	PHENOLS IN PPB	CYANIDE AS CN <sup>-</sup>	SULPHIDE AS S	AMMONIA NITROGEN AS N	KJELDAHL NITROGEN AS N	PHOSPHATES AS P	CHLORIDES AS CL	CHROMIUM AS CR	ZINC AS ZN	OTHERS
1. SCALE PIT, 7-STAND PLATE MILL																		
(COMP. 9:30AM- 3:30PM-OCT.27)	28	45	80	310	7.2	-	-	19	-	-	-	-	1.5	.056	46	0.06	-	-
(COMP. 9:30AM- 3:30PM -OCT.29)	17	40	150	300	7.0	36	-	27	0	< 0.01	-	-	-	-	-	0.0	0.10	-
2. 2 HI-HOT MILL																		
SCARFER																		
COILER																		
(COMP. 9:30AM- 3:30PM-OCT.27)	30	60	40	340	8.2	-	-	28	-	< 0.01	-	-	1.5	0.52	45	-	-	-
(COMP. 9:30AM- 3:30PM-OCT.29)	20	110	100	360	7.7	7.4	-	33	0	< 0.01	-	-	-	-	-	0.14	0.08	-
3. AS ABOVE																		
(GRAB 10:00AM - OCT.27)	30	50	60	350	7.4	-	-	17	-	< 0.01	-	-	2.0	0.30	45	-	-	-
(GRAB - OCT.29)	13	55	100	330	7.2	10.3	-	0	0	< 0.01	-	-	-	-	-	0.0	0.12	-
4. AS ABOVE PLUS 2 HI-HOT MILL BASEMENT																		
( 2 GRABS 10:00AM AND 3:30PM-OCT.27)	17	45	50	320	7.4	-	-	15	-	< 0.01	-	-	1.8	0.73	45	-	-	-
( GRAB -OCT.29)	20	35	150	490	7.3	8.3	-	32	0	< 0.01	-	-	-	-	-	0.0	0.10	-
5. SOUTH SOAKING PIT																		
(GRAB 10:15AM - OCT.27)	42	55	30	240	7.4	-	-	11	-	< 0.01	-	-	11	0.54	34	-	-	-
(GRAB - OCT.29)	3	35	110	340	7.5	2.95	-	60	0	< 0.01	-	-	-	-	-	0.0	0.05	-
6. No. 1 PICKLE LINE																		
(COMP. 9:00AM- 3:30PM-OCT.27)	46	50	40	1600	2.3	-	-	18	-	-	-	-	2.6	-	43	0.08	-	SO <sub>4</sub> <sup>=</sup> :1065
(COMP. -OCT.29)	15	50	55	3845	2.1	112	-	34	10	0.01	-	-	-	-	-	0.0	0.10	-

SAMPLE POINT AND DESCRIPTION	BOD 5	COD	SUSP SOLIDS	DISS SOLIDS	PH	TOTAL IRON	DISS IRON	ETHER SOLUBLES	PHENOLS IN PPB	CYANIDE AS CN <sup>-</sup>	SULPHIDE AS S <sup>=</sup>	AMMONIA NITROGEN AS N	KJELDAHL NITROGEN AS N	PHOSPHATES AS P	CHLORIDES AS CL	CHROMIUM AS CR	ZINC AS ZN	OTHERS
7. ELECTROTINNING, FOUNDRY AND 56" TANDEM TEMPER MILL.																		
(COMP. 9:30AM- 3:30PM-OCT.27)	38	130	80	340	6.8	-	-	15	-	-	-	-	0.65	1.5	34	4.3	-	SO <sub>4</sub> <sup>=</sup> :103
(COMPOSITE -OCT.29)	80	210	110	340	6.8	11.3	-	64	450	< 0.01	-	-	-	-	-	6.2	0.10	-
8. ELECTROTINNING LINES																		
(COMP. 9:00AM- 3:30PM-OCT.27)	95	160	130	550	6.8	-	-	11	-	-	-	-	1.1	2.4	31	6.2	-	SO <sub>4</sub> <sup>=</sup> :125
(COMPOSITE -OCT.29)	50	140	100	400	6.7	12.2	-	27	1750	< 0.01	-	-	-	-	-	8.0	0.10	-
9. FOUNDRY SERVICE BLDG., ELECTRIC REPAIR SHOP.																		
(GRAB: 9:10AM-OCT.27)	28	30	15	255	7.3	-	-	TRACE	-	0.00	-	-	1.2	0.23	-	0.01	0.23	-
10. FOUNDRY CORE AISLES, CENTRAL BOILER HOUSE.																		
(GRAB: 9:15AM-OCT.27)	35	35	100	290	7.1	6.0	0.06	2	-	0.00	-	-	1.8	0.30	-	0.06	0.46	-
11. ANNEALLING																		
(GRAB: 9:40AM-OCT.27)	1700	5800	660	800	6.8	17.6	0.58	301	-	< 0.01	-	-	3.7	0.82	-	0.02	0.54	-
12. GUARD HOUSE NO.3																		
(GRAB: 9:30AM-OCT.27)	70	90	60	370	8.4	0.98	0.0	13	-	0.00	-	-	4.6	6.8	-	0.0	0.09	-
13. SOUTH GOLD ROLLING, OIL RECLAIM.																		
(COMP. 10:00AM- 3:30PM-OCT.27)	700	1300	310	270	6.5	-	-	185	-	< 0.01	-	-	8.0	1.4	32	-	-	-
(COMPOSITE -OCT.29)	650	2500	500	340	7.3	9.0	-	495	12	< 0.01	-	-	-	-	-	0.0	0.30	-

SAMPLE POINT AND DESCRIPTION	BOD 5	COD	SUSP SOLIDS	DISS SOLIDS	PH	TOTAL IRON	DISS IRON	ETHER SOLUBLES	PHENOLS IN PPB	CYANIDE AS CN <sup>-</sup>	SULPHIDE AS S <sup>=</sup>	AMMONIA NITROGEN AS N	KJELDAHL NITROGEN AS N	PHOSPHATES AS P	CHLORIDES AS CL	CHROMIUM AS CR	ZINC AS ZN	OTHERS
14. OTTAWA ST. SEWER AT OUTFALL TO BAY.																		
(GRAB: 10:30AM-OCT.27)	600	720	260	590	6.1	27.2	10.7	143	-	< 0.01	-	-	2.5	0.92	-	0.29	0.18	-
(GRAB: 1:25PM-OCT.27)	85	220	130	410	6.3	23.6	0.0	26	-	< 0.01	-	-	1.4	0.45	-	0.52	0.08	-
(GRAB: 3:50PM-OCT.27)	110	110	70	330	6.5	-	-	11	-	< 0.01	-	-	1.4	0.22	-	0.4	0.08	-
(GRAB: -OCT.29)	28	95	150	330	6.9	40.5	-	TRACE	30	0.01	-	-	-	-	-	0.4	0.11	-
HOMER STREET PLANT																		
15. NO.3 PICKLE LINE																		
(COMP. 9:00AM- 3:30PM-OCT.27)	140	280	80	2640	2.1	820	765	21	-	< 0.01	-	-	3.2	9.3	1605	-	-	-
(COMP. 9:00AM- 3:30PM-OCT.29)	16	100	35	1345	2.4	250	-	20	0	0.01	-	-	1.8	-	-	0.0	0.09	-
16. TEMPER MILL, ANNEALLING																		
(COMP. 9:00AM- 3:30PM-OCT.27)	20	25	15	245	6.7	1.86	-	3	-	0.00	-	-	0.60	0.028	36	-	-	-
(COMP. 9:00AM- 3:30PM-OCT.29)	5	15	5	235	7.4	0.17	-	894	0	0.00	-	-	0.40	-	-	0.0	0.04	-
17. NO. 2 CLEANING LINE																		
(COMP. 9:00AM- 3:30PM-OCT.27)	32	65	35	215	7.6	5.9	0.0	TRACE	-	< 0.01	-	-	1.1	0.40	31	-	-	-
(COMP. 9:00AM- 3:30PM-OCT.29)	20	65	40	240	8.2	2.38	-	23	0	< 0.01	-	-	1.4	-	-	0.0	0.27	-
18. COLD ROLLING, GENERAL DRAINAGE, NO.5 STAND MILL, GALVANIZING LINE.																		
(COMP. 9:00AM- 3:30PM-OCT.27)	4600	9500	1280	1700	7.0	12.7	10.2	615	-	0.03	-	-	6.2	9	37	-	-	-
(COMP. 9:00AM- 3:30PM-OCT.29)	1800	5000	720	680	7.2	8.5	-	730	6	< 0.01	-	-	4.0	-	-	0.0	0.40	-
19. NO.2 PICKLE LINE																		
(COMP. 9:00AM- 3:30PM-OCT.27)	48	65	40	2570	1.9	164	140	5	-	< 0.01	-	-	2.0	0.028	39	-	-	-
(COMP. 9:00AM- 3:30PM-OCT.29)	18	70	100	3900	2.6	115	-	6	-	0.01	-	-	7.6	-	-	0.0	0.46	-

SAMPLE POINT AND DESCRIPTION	BOD 5	COD	SUSP SOLIDS	DISS SOLIDS	PH	TOTAL IRON	DISS IRON	ETHER SOLUBLES	PHENOLS IN PPB	CYANIDE AS CN	SULPHIDE AS S	AMMONIA NITROGEN AS N	KJELDAHL NITROGEN AS N	PHOSPHATES AS P	CHLORIDES AS CL	CHROMIUM AS CR	ZINC AS ZN	OTHERS
<u>BAYFRONT</u>																		
20. COKE OVENS AND BY-PRODUCT AREA.																		
(COMP. 10:00AM- 3:30PM-OCT.30)	120	320	40	650	7.1	1.9	0.17	15	-	5.7	0	100	125	0.11	-	-	-	-
(COMP. 9:30AM- 3:30PM-NOV.3)	650	810	30	550	6.8	-	-	90	-	13.0	-	79	140	0.23	-	-	-	-
21. MELT SHOP																		
(GRAB: 11:30AM -NOV.3)	15	15	20	340	7.2	4.9	0.06	TRACE	-	< 0.01	-	2.2	2.8	0.24	-	-	-	-
22. COMBINED MELT SHOP COKE PLANT AND BY-PRODUCTS.																		
(COMP. 11:00AM- 3:30PM-OCT.30)	19	35	20	340	6.8	0.73	0.13	5	-	0.05	0	15	18	0.09	-	-	-	-
(COMP. 9:30AM- 3:30PM-NOV.3)	65	85	15	395	6.9	2.2	0.24	11	-	2.1	0	15	19	0.23	-	-	-	-
23. BOILER HOUSE SEWER																		
(GRAB: 2:30PM -NOV.3)	1800	3100	80	4810	10.5	2.76	0.12	80	-	< 0.01	2500	-	4.3	1.3	-	-	-	-
24. OLD MELT SHOP OUTLET TO KENILWORTH SLIP																		
(GRAB: 1:30PM -OCT.30)	36	85	90	350	8.1	2.9	0.08	6	-	0.33	1	7	10	0.85	-	-	-	-
25. INFLUENT TO DORR THICKENER																		
(GRAB: 11:00AM -OCT.30)	-	-	600	1690	8.3	423	0.0	-	40	< 0.01	-	-	13	-	-	-	-	-
(GRAB: 10:00AM -NOV.3)	-	-	1300	1200	7.3	528	0.0	-	35	1.3	-	-	13	-	-	-	-	-
26. EFFLUENT FROM DORR THICKENER																		
(GRAB: 11:00AM -OCT.30)	-	-	130	490	8.1	26.5	0.03	-	120	0.02	-	-	3.5	-	-	-	-	-
(GRAB: 10:00AM -NOV.3)	-	-	170	370	7.4	10.2	0.0	-	18	0.36	-	-	8.6	-	-	-	-	-

SAMPLE POINT AND DESCRIPTION	BOD 5	COD	SUSP SOLIDS	DISS SOLIDS	PH	TOTAL IRON	DISS IRON	ETHER SOLUBLES	PHENOLS IN PPB	CYANIDE AS CN	SULPHIDE AS S	AMMONIA NITROGEN AS N	KJELDAHL NITROGEN AS N	PHOSPHATES AS P	CHLORIDES AS CL	CHROMIUM AS CR	ZINC AS ZN	OTHER S
27. INFLUENT TO LINK-BELT THICKENER																		
(GRAB. 11:00AM - OCT. 30)	-	-	1070	2230	9.2	920	0.0	-	12	0.01	-	-	7.5	-	-	-	-	-
(GRAB. 10:15AM - NOV. 3)	-	-	3400	350	10.3	350	0.8	-	0	0.01	-	-	7.5	-	-	-	-	-
28. EFFLUENT FROM LINK-BELT THICKENER																		
(GRAB. 11:00AM - OCT. 30)	-	-	20	290	8.7	6.0	0.0	-	12	< 0.01	-	-	1.3	-	-	-	-	-
(GRAB. 10:15AM - NOV. 3)	-	-	50	360	10.3	9.2	0.0	-	2	< 0.01	-	-	2.3	-	-	-	-	-
29. SOUTH INFLUENT TO LAGOON																		
(COMP. 10:30AM- 3:30PM-OCT. 30)	-	25	60	380	8.2	10.2	0.0	-	12	< 0.01	0	1.2	2.0	0.06	-	-	-	-
(COMP. 9:30AM- 3:30PM-NOV. 3)	-	840	310	490	8.3	48	0.0	-	35	0.52	0.3	3.8	42	0.24	-	-	-	-
30. NORTH INFLUENT TO LAGOON																		
(COMP. 10:00AM- 3:30PM-OCT. 30)	-	20	40	340	7.8	2.8	0.0	-	6	0.06	0	4.8	5.2	0.066	-	-	-	-
(COMP. 9:30AM- 3:30PM-NOV. 3)	-	55	40	430	7.5	1.92	0.3	-	20	0.08	0	17	19	0.26	-	-	-	-
31. LAGOON EFFLUENT																		
(COMP. 10:30AM- 3:30PM-OCT. 30)	-	15	20	400	7.7	1.4	0.0	-	0	0.03	0	7.9	8.6	0.072	-	-	-	-
(COMP. 9:30AM- 3:30PM-NOV. 3)	-	< 30	50	410	7.9	9.2	0.0	-	2	0.04	0	7.3	9.2	0.088	-	-	-	-
32. PHENOL PLANT INFLUENT BEFORE DILUTION																		
(GRAB. 10:30AM - OCT. 30)	-	-	25	7165	-	2.2	-	-	400,000	51.3	-	2100	2250	0.1	-	-	-	-
(GRAB. 1:30PM - NOV. 3)	-	3700	50	4950	8.8	106	2.7	-	500,000	48	-	2000	3750	0.20	-	-	-	-

(ALL RESULTS EXCEPT PH IN PARTS PER MILLION UNLESS OTHERWISE INDICATED)

## COLIFORM BACTERIA

## FECAL COLIFORMS

8400

6600

2300

904

(RESULTS PER 100 ML.)

### WASTE LOADINGS

The following net waste loadings (gross loadings less service water loadings) have been calculated.

Volume	:	111,000,000 Igpd
BOD <sub>5</sub>	:	48,000 lbs/day
COD	:	111,000 lbs/day
Suspended solids	:	42,700 lbs/day
Dissolved solids	:	58,700 lbs/day
Ether solubles	:	17,000 lbs/day
Iron as Fe	:	8,000 lbs/day
Cyanide as CN <sup>-</sup>	:	168 lbs/day
Phenolic equivalents	:	42 lbs/day
Chromium as Cr	:	270 lbs/day
Zinc as Zn	:	40 lbs/day
Tin as Sn	:	routine analytical procedures not sufficiently accurate (separate report to follow)
Kjeldahl Nitrogen as N	:	7,600 lbs/day
Ammonia nitrogen as N	:	4,650 lbs/day
Phosphate as P	:	270 lbs/day
Sulphide as S	:	740 lbs/day
Chlorides as Cl	:	10,800 lbs/day
Sulphates as SO <sub>4</sub>	:	12,200 lbs/day

### DISCUSSION OF RESULTS

#### Main Plant

Processing facilities in the Main Plant included a reversing 2 Hi-Hot Mill, a 7-stand Tandem Mill, four single-stand reversing mills, No. 1 pickling line, two electrotinning lines, one operating annealing line, and two 2-stand temper mills, No. 1 cleaning line and one shearing line. Projected expansion at the Main Plant included a new electrotinning line and a new 2 Hi-Hot Mill.

The contaminants of most significance in the waste effluents originating in the main plant were suspended solids, iron, oil and acidity. High BOD<sub>5</sub> concentrations were associated with the high ether solubles concentrations at sample points No. 7 (electrotinning and 56" temper mill), No. 8 (electrotinning lines) and No. 13 (south cold rolling and oil reclaim). The Company's waste control programme calls for the completion of systems to treat the hot mill and cold mill areas and pickling wastes by the end of 1971.

Chromium was present in significant quantities at sample points No's 7 and 8 (electrotinning lines).

#### Homer Street Plant

Processing facilities at the Homer Street Plant included No. 2 and No. 3 pickling lines, a cleaning line, a 5-stand cold rolling mill, a single stand 66" cold rolling mill, two single-stand temper mills, batch annealing facilities, two galvanizing lines and shearing lines.

Here again, the contaminants of most significance were acidity and iron (No. 2 and No. 3 Pickle Lines), ether solubles (sample points No's 16 and 18-temper mill and cold rolling area) and BOD<sub>5</sub> and suspended solids (sample point No. 18 - cold rolling area). The Company's waste control programme calls for conversion of all pickle lines to hydrochloric acid with regeneration and re-use of the acid. The oils are also to be removed from the waste streams before discharge by the 1971 year-end.

#### Bayfront Plant

Processing facilities at the Bayfront plant included four coke oven batteries, (158 ovens), a by-product plant producing tars and naphthalene, ammonium sulphate, sulphur and light oil, No's 1, 2 and 3 Blast Furnaces, three basic oxygen furnaces, an oxygen plant, a boilerhouse, and No. 3 galvanizing

line not in operation. At the time of the survey, projected expansion included No. 4 Blast Furnace which has since been completed and No. 5 Coke Oven Battery. No. 1 Blast Furnace is to be removed from service.

Contaminants of significance were:

- a) cyanide in the coke ovens and by-product area sewer
- b) suspended solids in the lagoon effluent
- c) the bacteriological fecal coliform and total coliform counts in the lagoon effluent, and
- d) sulphides, BOD<sub>5</sub>, COD, dissolved solids, and oil in the boiler house sewer.

The Company's waste control programme calls for compliance of the coke plant sewer with OWRC objectives by the end of 1972.

The lagoon was being dredged during the survey. This should improve the efficiency of solids removal. In the years ahead, the lagoon should be dredged on a regular basis and the build-up of solids as occurred in 1970 should not be allowed to re-occur. Construction of facilities to discharge all sanitary sewage to the municipal system was underway and is to be completed in these stages, the last to be completed during 1974.

The boiler house sewer contained excessive concentrations of sulphides, oil and oxidizable materials. An investigation into the sources of these contaminants should be initiated by the Company.

#### Silicon Plant

The effluent from the silicon plant contained high concentrations of biologically decomposable material, suspended solids and oil. Expansion at the Silicon Plant includes a new cold rolling mill.

### RECOMMENDATIONS

It is recommended that:

- 1) The boiler house sewer and the Silicon Plant sewer be placed on the Company's waste monitoring programme and the results be forwarded to the Division of Industrial Wastes of the OWRC along with the results of the existing monitoring programme.
- 2) Investigations be initiated by the Company to determine the sources of the contaminants in the boiler house and Silicon steel plant waste effluents and the appropriate measures be taken to reduce or eliminate these contaminant discharges.
- 3) Analyses for Chemical Oxygen Demand or Total Oxygen Demand on the waste effluent flows from the Main and Homer St. Plants be added to the Company's routine effluent monitoring programme.
- 4) The Company proceed with its pollution abatement programme as previously scheduled.

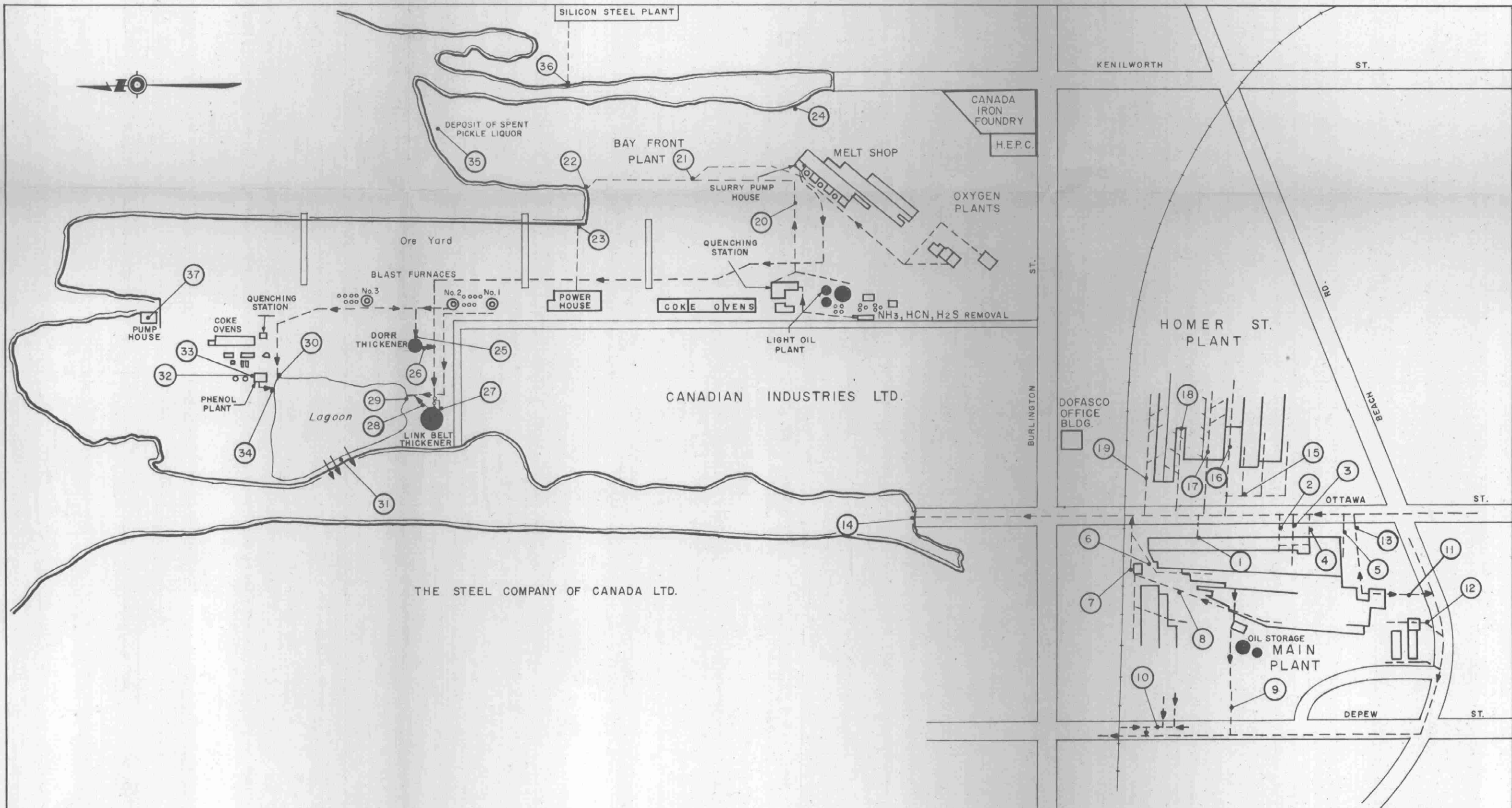
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JDL/vs



ONTARIO WATER RESOURCES COMMISSION

**DOFASCO (HAMILTON)**  
FIGURE NO. 1

SCALE: NOT TO SCALE

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